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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/585,682	06/01/00	KO	3526.2US (97

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EXAMINER

CHU, C

ART UNIT PAPER NUMBER

2815

DATE MAILED: 08/01/01

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/585,682

Applicant(s)

KO ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 . 6) ☐ Other: .

## DETAILED ACTION

### *Double Patenting*

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 1 ~ 13 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 - 12 of prior U.S. Patent No. 6121671. This is a double patenting rejection.

In claim 1, instant applicant recites a phrase "at least one contact aperture defined through said passivation layer and including at least one sidewall extending substantially perpendicularly relative to said semiconductor substrate, at least a portion of said at least one sidewall terminating at said undoped silicon dioxide cap," and U.S. Patent No. 6121671 recites a phrase "at least one contact aperture defined through said passivation layer and including a substantially vertical sidewall, said at least one contact aperture terminating at said undoped silicon dioxide cap." Both phrases are the main difference between instant application and the U.S. Patent No. 6121671. However, the phrases are merely describing same structure of the invention by using different words. Since all of the claimed elements and the relationships therebetween are match each other, therefore claims 1 – 5 are rejected under 35 U.S.C. 101 as claiming the same invention.

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In claim 6, instant applicant recites a phrase “at least one doped silicon oxide structure over said at least one undoped silicon oxide structure and having at least one sidewall substantially perpendicular to a plane of said semiconductor substrate, at least a portion of said at least one sidewall terminating at said at least one undoped silicon oxide structure,” and U.S.

Patent No. 6121671 recites a phrase “at least one doped silicon oxide structure over said at least one undoped silicon oxide structure and having at least one sidewall substantially perpendicular to a plane of said semiconductor substrate, said at least one sidewall terminating at said at least one undoped silicon oxide structure.” Both phrases are the main difference between instant application and the U.S. Patent No. 6121671. However, the phrases are merely describing same structure of the invention by using different words. Also, in claim 10, the phrase “said at least one undoped silicon oxide structure is located over said conductive structure” is disclosed in the U.S. Patent No. 6121671. Since all of the claimed elements and the relationships therebetween are match each other, therefore claims 6 – 13 are rejected under 35 U.S.C. 101 as claiming the same invention.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1 ~ 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogawa et al.

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Note Fig. 1C of Ogawa et al., where the reference shows a semiconductor device, comprising: a semiconductor substrate (2) including an active device region (see Fig. 1C); at least one conductive line (4) disposed upon said active device region, said at least one conductive line being flanked by sidewall spacers (5 and see Fig. 1C); an undoped silicon dioxide cap (9 and column 16, lines 61 ~ 62) disposed over and in contact with said at least one conductive line (see Fig. 1C); a passivation layer (11) over said undoped silicon dioxide cap (see Fig. 1C); and at least one contact aperture (see Fig. 1C) defined through said passivation layer and including at least one sidewall extending substantially perpendicularly relative to said semiconductor substrate, at least a portion of said at least one sidewall terminating at said undoped silicon dioxide cap (see Fig. 1C). Further, the mere fact that an undoped silicon dioxide cap, especially “undoped,” of Ogawa et al., the claim is anticipated thereby. Because, the reference does not specifically disclosed as “doped silicon dioxide cap,” therefore, Ogawa et al. meets the mere and bound of the claim.

As to the language on line 2 of claim 2, “a word line”, applicant should note that this is merely “result or function” language which cannot be relied upon to define over Ogawa et al., since Ogawa et al. discloses all of the claimed elements and their recited relationships. Moreover, the examiner will presume that the recited results are inherent in Ogawa et al., since all of the claimed elements and the relationships therebetween are met by Ogawa et al. If the recited result or function is not inherent in Ogawa et al., then this would mean that applicant has failed to recite one or more critical features of the present invention (i.e., a problem under 112, first paragraph).

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Regarding claim 3, Ogawa et al. discloses said passivation layer (11 in Fig. 1C) comprises doped silicon dioxide (column 16, lines 14 ~ 16).

Regarding claim 4, Ogawa et al. discloses said passivation layer (11 in Fig. 1C) comprises borophosphosilicate glass (column 8, line 57), phosphosilicate glass, or borosilicate glass.

Regarding claim 5, Ogawa et al. discloses said undoped silicon dioxide cap (9 in Fig. 1C) is at least partially exposed through said at least one contact aperture (see Fig. 1C).

Regarding claim 6, note Fig. 1C of Ogawa et al., where the reference shows a semiconductor device, comprising: a semiconductor substrate (2); at least one undoped silicon oxide structure (9 and column 16, lines 61 ~ 62) in contact with a conductive structure positioned over said semiconductor substrate (see Fig. 1C); and at least one doped silicon oxide structure (11) over said at least one undoped silicon oxide structure and having at least one sidewall substantially perpendicular to a plane of said semiconductor substrate, at least a portion of said at least one sidewall terminating at said at least one undoped silicon oxide structure (see Fig. 1C). Further, the mere fact that an undoped silicon dioxide cap, especially “undoped,” of Ogawa et al., the claim is anticipated thereby. Because, the reference does not specifically disclosed as “doped silicon dioxide cap,” therefore, Ogawa et al. meets the mere and bound of the claim.

Regarding claim 7, Ogawa et al. discloses said at least one sidewall comprises a sidewall of an aperture (see Fig. 1C).

Regarding claim 8, Ogawa et al. discloses said at least one sidewall at least partially defines an aperture through said doped silicon oxide structure (see Fig. 1C).

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Regarding claim 9, Ogawa et al. discloses said at least one doped silicon oxide structure (9 in Fig. 1C) comprises borophosphosilicate glass (column 8, line 57), phosphosilicate glass, or borosilicate glass.

Regarding claim 10, Ogawa et al. discloses said at least one undoped silicon oxide structure (9 and column 16, lines 61 ~ 62) is located over said conductive structure (4, and see Fig. 1C).

Regarding claim 11, Ogawa et al. discloses said at least one undoped silicon oxide structure (9 and column 16, lines 61 ~ 62) comprises an insulative cap over a conductive line (see Fig. 1C).

Regarding claim 12, Ogawa et al. discloses said insulative cap is partially exposed through an aperture of said at least one doped silicon oxide structure defined by said at least one sidewall (see Fig. 1C).

Regarding claim 13, Ogawa et al. discloses said at least one undoped silicon oxide structure is exposed adjacent said at least one sidewall (see Fig. 1C).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blalock et al. in view of Basi et al.

Regarding claims 1 and 6, Blalock et al. discloses the claimed invention except at least one undoped silicon oxide structure positioned over said semiconductor substrate and under doped silicon oxide structure. However, Basi et al. shows that at least one undoped silicon oxide structure (21 in Fig. 3) positioned over said semiconductor substrate (20 in Fig. 3) and under doped silicon oxide structure (23 in Fig. 3). Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Blalock et al. by substituting at least one undoped silicon oxide structure instead of silicon nitride as taught by Basi et al. The ordinary artisan would have been motivated to modify Blalock et al. in the manner described above for at least the purpose of decreasing diffusivity of impurity oxides to the substrate. Further, instant application recites a phrase “the intermediate structure layer 22 may be fabricated from either silicon nitride or undoped silicon dioxide” (page 11, lines 10 ~ 11 of the specification). The recitation shows that silicon nitride and undoped silicon dioxide are an equivalent material known in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute silicon nitride structure in Blalock et al. to undoped silicon dioxide as taught by instant application. Since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.



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As to the language on line 2 of claim 2, “a word line”, applicant should note that this is merely “result or function” language which cannot be relied upon to define over Blalock et al., since Blalock et al. discloses all of the claimed elements and their recited relationships. Moreover, the examiner will presume that the recited results are inherent in Blalock et al., since all of the claimed elements and the relationships therebetween are met by Blalock et al. If the recited result or function is not inherent in Blalock et al., then this would mean that applicant has failed to recite one or more critical features of the present invention (i.e., a problem under 112, first paragraph).

Regarding claim 3, Blalock et al. discloses said passivation layer (14 in Fig. 2) comprises doped silicon dioxide (column 6, lines 7 ~ 10).

Regarding claim 4, Blalock et al. discloses said passivation layer (14 in Fig. 2) comprises borophosphosilicate glass, phosphosilicate glass, or borosilicate glass (column 6, lines 14 ~ 16).

Regarding claim 5, Blalock et al., as modified, discloses said undoped silicon dioxide cap (16 in Fig. 2) is at least partially exposed through said at least one contact aperture (see Fig. 2).

Regarding claim 7, Blalock et al. discloses said at least one sidewall comprises a sidewall of an aperture (see Fig. 2).

Regarding claim 8, Blalock et al. discloses said at least one sidewall at least partially defines an aperture through said doped silicon oxide structure (see Fig. 2).

Regarding claim 9, Blalock et al. discloses said at least one doped silicon oxide structure (14 in Fig. 2) comprises borophosphosilicate glass, phosphosilicate glass, or borosilicate glass (column 6, lines 14 ~ 16).

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Regarding claim 10, Blalock et al., as modified, discloses said at least one undoped silicon oxide structure is located over said conductive structure (see Fig. 2).

Regarding claim 11, Blalock et al. discloses said at least one undoped silicon oxide structure comprises an insulative cap over a conductive line (see Fig. 2).

Regarding claim 12, Blalock et al. discloses said insulative cap is partially exposed through an aperture of said at least one doped silicon oxide structure defined by said at least one sidewall (see Fig. 2).

Regarding claim 13, Blalock et al. discloses said at least one undoped silicon oxide structure is exposed adjacent said at least one sidewall (see Fig. 2).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsukamoto discloses a semiconductor device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (9:30 - 6:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu  
Examiner  
Art Unit 2815

c.c.  
July 27, 2001



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